Amendments to the Claims:

The following list of claims will replace all prior versions of the claims in the application:

1. (Canceled)

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- 2. (*Currently amended*) A method for assessing toxicity and toxicology of a compound of interest, comprising:
 - a) exposing tissue samples comprising a set of genes to a the compound of interest;
- b) monitoring the response measuring the hybridization signal of each gene in the set of genes to the compound of interest;
- c) creating gene expression profiles using two or more variables, wherein the two or more variables include time and dose;
 - d) creating composite variables from the gene expression profiles of (c);
 - e) creating one composite from the composite variables of (d); and
- f) comparing the results of (e) to a profile of a known compound to determine whether there is a toxicological response to the compound of interest.
- 3. (*Previously presented*) The method of Claim 2, wherein the set of genes comprises 10-100,000 genes.
- 4. (*Currently amended*) The method of Claim 2, wherein the <u>two or more</u> variables are time, <u>further include</u> treatment or dose.6
- 5. (Canceled)
- 6. (*Previously presented*) The method of Claim 2, wherein step (b) further comprises averaging the response hybridization signals of the genes is averaged to determine a background level; and selecting for further analysis the hybridization signals that exceed a pre-selected percentage of the background level.

- 7. (*Previously presented*) The method of Claim 2, wherein step (c) comprises performing contrast analysis.
- 8. (*Previously presented*) The method of Claim 2, wherein step (c) comprises performing cluster analysis.
- 9. (*Previously presented*) The method of Claim 2, wherein step (d) comprises performing principal components analysis.
- 10. (Currently amended) The method of Claim 2, wherein the composite variables of (e) are created using logistic regression[,] or discriminant analysis.
- 11. (*Currently amended*) A method for screening a compound <u>of interest</u> for toxicological effect, comprising:
- (a) selecting a plurality of polynucleotide targets wherein the polynucleotide targets have a first gene expression levels altered in tissues a first tissue sample treated with known toxicological agents;
- (b) treating a second tissue sample with a <u>the</u> compound to <u>be tested</u> of interest to induce second gene expression levels of a <u>the</u> plurality of polynucleotide <u>targets</u>; <u>and</u>
- (c) comparing the first expression <u>level levels</u> of (a) with the second expression <u>level levels</u> of (b) to generate a measure of similarity;

wherein the measure of similarity is indicative of toxicological effect of the compound of interest.

12. (Canceled)

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13. (*Previously presented*) The method of Claim 11, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.

- 14. (*Previously presented*) The method of Claim 11, wherein the known toxicological agent is acetaminophen.
- 15. (*Previously presented*) The method of Claim 11, wherein the known toxicological agent is CCl₄.
- 16. 22. (Canceled)
- 23. (*Previously presented*) The method of Claim 2, wherein step (d) comprises performing partial least squares analysis.
- 24. (*Previously presented*) The method of Claim 2, wherein step (d) comprises performing factor analysis.
- 25. (Currently amended) The method of Claim 4 2, wherein the compound of interest is acetaminophen.
- 26. (Currently amended) A method for assessing the toxicity and toxicology of a compound of interest, comprising:
 - a) exposing tissues comprising a set of genes to a the compound of interest;
- b) generating gene expression data corresponding to the response <u>hybridization signal</u> of each gene in the set of genes to the compound <u>of interest</u>;
- c) selecting a subset of the gene expression data which are time stable and dose dependent;
- d) combining the subset of gene expression data into one or more composite variables to assign each gene to a pattern; and
- e) converting the one or more composite variables into one predictive composite measure for determining a probability of similarity;

wherein the one predictive measure probability of similarity comprises an indicator of toxicological effect of the compound of interest.

- 27. (*Previously presented*) The method of claim 26, wherein step (c) comprises performing contrast analysis.
- 28. (*Previously presented*) The method of claim 26, where step (d) comprises performing principal components analysis.
- 29. (*Previously presented*) The method of claim 28, wherein step (e) comprises performing a logistic regression using the principal components identified in step (d).
- 30. (New) The method of claim 26, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.
- 31. (*New*) The method of claim 26, wherein step (b) further comprises averaging the hybridization signals of the genes to determine a background level, and wherein the gene expression data is generated from the hybridization signals that exceed a pre-selected percentage of the background level.
- 32. (New) The method of Claim 2, wherein the tissue samples are liver, kidney, brain, spleen, pancreas and lung.
- 33. (New) The method of Claim 2, wherein the compound of interest is CCl₄.